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Vaart, Taco van der; Donk, Dirk Pieter van

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Buyer Focus: Evaluation of a new Concept for Supply Chain Integration

Taco van der Vaart^{*} and Dirk Pieter van Donk

SOM theme A: The human and technical side of production: the management of interdependencies

Abstract

The goal of integrated supply chains is to remove barriers to ease the flow of materials and information. This article concentrates on an important barrier: shared resources in a supply chain. The removal of these shared resources is closely related to the recently introduced concept of buyer focus. Buyer focus is described as the singling out of resources in order to supply one buyer along the whole range of its products. The value of buyer focus for supply chain integration is evaluated and in two cases illustrated. This article suggests that there are two extreme configurations in supply chains. On the one hand, suppliers with buyer-focused operations to enable high levels of integration in order to cope with uncertainty in volume, mix and leadtime. On the other hand, shared resources and low levels of integration, which are more likely in supply chains that are dominantly cost driven.

Keywords:

supply chain integration, buyer-focused operations, shared resources

^{*} Corresponding author.

E-mail address: j.t.van.der.vaart@bdk.rug.nl

1. Introduction

Supply chain integration is a major challenge to operations management as a discipline and as a practice. Many improvements within supply networks are enabled by developments in the areas of communication and information technology. Despite the possibilities for improvement, there are still many questions to be answered with respect to the concept of integration. On the one hand, there is some evidence that linking internal processes to external suppliers and customers is a prerequisite for success and a consensus among researchers exists concerning the strategic importance of integration [1]. On the other hand, integration as a concept is not very well defined and is difficult to measure empirically [2]. Supply chain practices in different types of industry show that integration might be understood in different ways or that a specific aspect is stressed. In the supply of foods, for instance, integration seems a synonym for transparency of information and most efforts are focused on communication and sharing information (e.g. Point-Of-Sale data and CPFR). In the automotive industry, integration is closely linked to concepts like JIT and lean production [3,4], as well as co-managed inventory, co-design and systems integrators. Here the focus is on linking manufacturing stages through low levels of stock and short lead times. Apparently, different characteristics of a supply chain lead to different integrative practices. An explanation for this phenomenon might be that these different characteristics cause the members of the supply chain to deal with different barriers in their striving for streamlined materials and information flows. However, the precise relationship between characteristics of a supply chain and barriers to integration is not yet well understood. Moreover, the best way to deal with different types of barriers is also not clear.

Recently, Griffiths & Margetts [5] and Griffiths, James & Kempson [6] introduced a new concept that sheds some new light on integration and the removal of barriers: the concept of buyer focus. It seems from their findings that buyer focus enables integration of operations in the supply chain. Buyer focus seems to remove physical barriers in the supply chain and enables cooperation between buyers and supplier. As little has been published, so far, we relate buyer focus to previous work on focus and focused factories. Buyer focus seems to be a contrast to shared resources in a supply chain, which according to Van Donk and Van der Vaart [7] pose considerable operational barriers towards integrating planning and control. This paper aims at evaluating the concept of buyer focus to assess its value in establishing supply chain integration. Especially, we aim at finding the conditions that are favourable for implementing the concept of buyer focus. Moreover, we will relate both concepts to the level and type of integration that can be achieved.

The paper is organised as follows. In the next section we shortly review a number of approaches in the field of supply chain management that pay attention to integration and the removal of barriers in supply chains. The third section assesses shared resources in supply networks. Subsequently, the concept of buyer focus is introduced and analysed within the context of ideas on focusing operations in general operations management literature. The fifth section of this paper integrates the ideas from previous sections and the ideas are illustrated in two cases. The sixth section discusses an integrative framework, which gives two opposing seemingly coherent sets of characteristics: one characterised by shared resources and the other by buyer focus. The last section summarises our main findings and gives some suggestions for future research.

2. Integrated supply chains

There seems no generally accepted definition of supply chain management or its activities in literature [8-11]. The same holds for integrated supply chains. However, there is little dispute on the goals of supply chain management and integration. Naylor, Naim & Berry [12] state that the goal of an integrated supply chain is to

remove all boundaries to ease the flow of material, cash, resources and information. The ultimate aim is to improve customer service and efficiency. Many initiatives within the field of supply chain management and operations management are directed towards the removal of these boundaries or more generally the removal of barriers. In this section we discuss a number of the integrative activities and initiatives within the field of supply chain management.

Perhaps the most widely accepted philosophies or paradigms that focus on elimination of barriers are Lean Thinking (and Just-In-Time) and Agile Manufacturing [12,13]. Leanness calls for the elimination of waste or muda. In agile manufacturing elimination of waste is important but not a prerequisite. In this paradigm the ability to rapidly reconfigure the manufacturing system is essential. In order to achieve the main goals as elimination of waste, lead-time compression, and the ability to reconfigure quickly, manufacturing flexibility is needed. 'Manufacturing flexibility has been depicted as one of the key factors available to firms to respond to the myriad of fast paced changes that take place in their competitive environment' [14]. Without elimination of barriers like high setup costs, large batch sizes, and the likes, leanness and agility are difficult to achieve. The development of concepts like Vendor Managed Inventories (VMI), Quick Response, Efficient Consumer Response and Collaborative Planning, Forecasting and Replenishment are other supply chain initiatives related to the above philosophies or paradigms.

In a study of Frohlich & Westbrook [2] integration is operationalized based upon eight different kinds of activities that manufacturers commonly employ to integrate their operations with suppliers and customers: access to planning systems, sharing production plans, joint EDI access/networks, knowledge of inventory mix/levels, packaging customisation, delivery frequencies, common logistical equipment/containers and common use of third-party logistics. The aim of these integrative activities is to eliminate operational barriers in the material flow and in the information flows. The main stream within the SCM literature seems to focus on barriers directly linked to these flows.

Based on other disciplines a number of other initiatives to remove barriers can be identified. Croom et al. [10] identify a number of key antecedent disciplines currently evidenced in supply chain research – included amongst these being systems thinking, information theory, industrial dynamics, production economics, social theory, game theory and production engineering.

Within the field of operations management and production economics Multi-Level Supply Control (MLSC) is an interesting integrative concept introduced by Van der Vlist, Hoppenbrouwers & Hegge [15]. In the concept of MLSC, the supplier will be stepwise controlled at the various levels of his product and process structure. Van der Vlist et al. [15] argue that: ‘in product oriented assemble to order industries MLSC offers an extremely powerful supply chain control mechanism. It eliminates stock, integrates processes with suppliers and in that creates an extended enterprise’.

Another interesting stream is the model-based research on contracts in the supply chain setting, because it shows in our view that the arrangements within supply contracts are important tools to streamline the flow of materials and information. For example, the supply contracts with quantity flexibility clauses facilitate close co-ordination in buyer-supplier relationships. The model-based research on contracts helps to evaluate different types of arrangement [16-18]. Tsay, Nahmias & Agrawal provide a good review of this stream [19].

An important group of barriers in achieving integration is connected to the relationships between the members of a supply chain. Well-known examples are the absence of trust in relationships or the reluctance of members to cooperate [20]. Christopher & Jüttner [21] state that building trust is an essential pre-requisite for the achievement of long-term mutual benefit and can be considered as a means to eliminate relational barriers. Also important in this context is the role of power in supply chains. Interesting is the conclusion of Cox [22]: ‘integrative supply chain management approaches work best in supply chain structures of *extended buyer dominance* or *extended buyer and supplier interdependence*’. Therefore, the power regime in a supply chain can also be considered as a possible barrier that blocks the

creation of streamlined information and materials flows. On the other hand, power can also be used to enforce the elimination of certain barriers.

The above description gives a short review of important contributions in supply chain management research and a condensed overview of the barriers that are to be removed in the efforts to achieve supply chain integration. In this paper we focus on one particular barrier, the shared resources in supply networks. As will be elaborated upon in the next section, shared resources call for close control and planning of the capacity that should be used to serve different buyers.

3. Shared Resources in Supply Networks

In 1985 Hoekstra & Romme introduced the concept of the decoupling point [23]. The decoupling point is defined as the point in the flow of goods that separates the customer-order part of the activities from the activities that are based on forecasting and planning [12,23]. Besides this very valuable contribution they provided a strong basis for integral logistics that is valuable in the discussions on supply chain management and supply chain integration. In this paper we are especially interested in the role of shared resources in supply networks. Hoekstra & Romme [23] define a shared resource as a common-capacity source in the (internal) chain of two or more different product-market combinations (PMC's), as is illustrated in Figure 1. A shared resource normally is a functionally organized (process oriented) link in a manufacturing process.

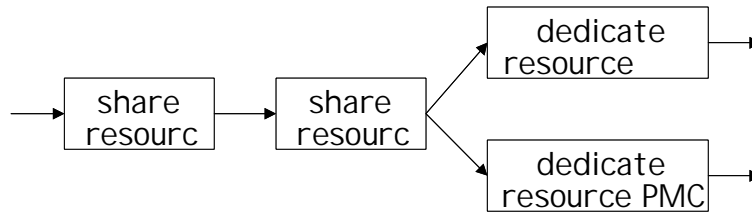


Figure 1. Shared resource

A natural extension of this concept to the field of SCM can be defined as follows: A shared network resource is a common-capacity source in two or more supply chains or networks. In this extended concept these resources are not necessarily process-oriented. Shared network resources are links (product or process oriented) that are used by a supplier in the network for more than one buyer. Hence, orders from different buyers are competing for the same resources (people, machines, etc.).

The previous section stated that the goal of supply chain management is the removal of barriers to ease material and information flows. The elimination of barriers includes the elimination of shared resources whenever possible. The rule is that shared resources should be avoided unless the advantages like economies of scale and the possibility to smooth overcapacity/undercapacity outweigh significant adverse aspects like complexity of control, creation of stocks, longer lead times, reduction of flexibility, the efficiency of the shared resource, the integral effect on the overall delivery service [23]. With the last two aspects these authors also submit that introducing or eliminating shared resources should be judged on the basis of an integral trade-off. This implies that suppliers need to weigh the benefits and drawbacks for the different buyers before they 'remove' a shared resource.

Shared resources add considerably to the complexity of planning & control, even within a single operation. This is especially true if the capacity of these resources is scarce. In that case the available capacity has to be divided among the product-market combinations. Operations planning & control need to incorporate priority rules and the areas of authority for decision-making must be clearly determined. In combination with high setup times and high pressure on delivery times overall organizational effectiveness might be difficult to achieve due to interdepartmental goal incompatibility. As St. John [24] wrote: 'If operating level decisions are guided by parochial rather than organization wide goals, the overall pattern will be inconsistent and counterproductive'. See also [25].

In the supply chain context the issue of shared resources and goal incompatibility is even more complicated. The power perspective plays an important

role in the division of capacity and priority rules used by suppliers. The more powerful buyers claim ‘their’ part of the supplier’s capacity and the others depend on the capabilities of the suppliers to cope with their demands. So far, the operational aspects of shared resources in supply chain management and in supply chain integration have been neglected.

We already stated that the removal of shared resources should be judged on the basis of an integral trade-off. It is important to realise that this judgement depends largely on the perspective taken. Judgement from the perspective of an individual company in a chain may lead to different conclusions than judgement from a true supply chain perspective. An important related issue is who benefits and who pays for such supply chain initiatives [8]. All buyers might benefit from the removal of shared resources, while possibly only one buyer pays for it.

From the above we conclude that assessment of shared resources in supply networks is an important issue in supply chain management. In this assessment the difficulty is in the weighing of the pros and cons. We return to this discussion in section 5 after the concept of buyer focus is properly introduced.

4. The concept of buyer focus

Discussion of the concept of focus started with Skinner’s seminal paper: ‘The focused factory’ [26]. Two main principles underlie the idea of focus, according to Skinner [26]: (1) focus is associated with a limited, concise, manageable set of products, technologies, volumes, and markets and, (2) manufacturing policies and supporting services need to be structured so that they focus on one explicit manufacturing task instead of on many inconsistent, conflicting, implicit tasks. In most contributions on the concept of focus both principles are evident: a part of the resources is set apart, based on a certain criterion, in order to ease and focus the manufacturing task. We present shortly some of the criteria used in the literature. Hill [27,28] emphasizes the need to group together those processes into a focused factory (or plant-within-a-plant) that serve customers with the same order-winning criteria. That might imply that one customer is supplied from one line or cell for its low volume, high quality, fast

delivery products, while high volume, repetitive products (for the same customer) are produced in another part of the plant. Hayes and Wheelwright [29] give a number of alternative approaches or criteria to focus an operation: based on volume (high versus low volume), based on product/market, and based on process or technologies. Recently, Slack and Lewis [30] discuss focused operations, as well. They argue that just as there are many ways of segmenting markets, there are also several approaches to focusing operations. The organization of process technologies, staff and processes can be based on several criteria [30]. In line with the above they distinguish six approaches for focusing operations: a performance objective focus (to satisfy the performance requirements of a particular market), a product/service specification focus (to produce a range of products for a target market), a geographic focus (an operation for a specific geographic market), a variety focus (e.g. a division between standard and non-standard products), volume focus (high versus low), and a process requirements focus (based on similarity in process technology). While the first way of segmenting operations is based on market criteria alone, the last one is based on resource criteria.

All of the above approaches aim at improving the *internal* operations and policies of one organisation. As said, the underlying idea is to split up the operation into better manageable focused parts in order to meet certain (performance) criteria. In general this will result in singling out resources for a group of customers or for product-market combinations. However, these resources will in general be shared.

In the context of supply chain management Griffiths & Margetts [5] and Griffiths et al. [6] introduce a new form of focus: customer or buyer focus. Buyer focus is a type of focus in which resources are singled out to serve one single buyer. As such, the criterion is unlike those mentioned above. The objective for this type of focus is typically related to supply chain integration: the removal of operational barriers stemming from shared resources and the alignment of the supplier's buyer-focused operations to the operations of one specific buyer. According to Griffith et al. [5,6] buyer focus is especially suited if a supply relationship is dominated by uncertainty in demand, in mix, volume and/or lead-time. Although JIT and Cellular Manufacturing (or group technology) are able to deal with mix uncertainty (under a

stable volume), they are less able to cope with volume and lead-time fluctuations. The main advantages of buyer-focused operations are delivery of batches of different sizes, and fast adaptation of schedules to realize lead-time flexibility. The main segmentation is that resources are singled-out for the purpose of serving one buyer along the whole range of his products.

Buyer focus is a relatively new theoretical concept, although already applied in practice especially in the automotive industry. First-tier suppliers delivering Just-in-Time to the buyer's final assembly lines, assemble their systems in many cases on dedicated lines. However, from a theoretical point of view the development of the concept of buyer-focus is still in its infancy and little is known under what conditions suppliers should pursue a buyer focus strategy. In the automotive industry buyer focus seems to be restricted to subassembly operations and the uncertainty that suppliers face within this industry is rather limited (certainly in volume and lead-time). Examples from practice in which other technologies are singled out to serve a single buyer are hardly investigated nor documented.

From the case studies performed by Griffiths et al. it is clear that the buyer-focused cells operate as an extension of the buyer's operations. Buyer-focused operations facilitate integration, due to the removal of shared resources. One of the prerequisites seems, at least that volume is large enough to justify the investment in facilities dedicated to one buyer. Flexibility (in mix, volume and delivery speed) is accomplished by integrated planning, short distance to the buyer, a multi-skilled workforce and some slack (overtime, extra shifts). Each of these elements is well known but the unique combination is new. The main innovation is, however, that the objective is to enable integration between supplier and buyer by removing shared resources as one of the main barriers for integration. The next sections further explore how integration and buyer focus are related.

5. Integration, shared resources and buyer focus

A shared resource in a supply network is a barrier to applying (many) SCM initiatives. This proposition is especially true for integrating planning & control.

Planning and allocation of (scarce) capacity in the case of shared resources are complicated issues. From the description of buyer focus and the examples described in the literature it seems that buyer focus is a solution and enables integrative planning and control of resources. To improve our understanding of the relationship between integration and the structure of the resources (either shared or buyer-focused), we distinguish three different integrative stages. As we will explore in the sequel, the importance of shared resources is related to the stage of integration in a supply chain or network. The three stages are (see figure 2):

- *The transparency stage:* An integrated supply chain is in the transparency stage if the supply chain members share relevant information on inventories, demand, promotions, etc. The information (e.g. forecast) they share at this stage is without any form of commitment. The major barriers to remove at this stage are probably the incompatibility of information systems and the lack of mutual trust (i.e. the fear that the information shared is misused by one of the supply chain members).
- *The commitment and coordination stage:* In this next stage the supply chain members share all relevant information. Now the information shared is not without commitment. For instance, in a quantity commitment clause the buyer's ultimate purchases may deviate from a previous planning estimate, subject to certain constraints and/or financial consequences. The defined clauses in the supply contracts are not just designed for commitment. They also have a coordination purpose. The barriers mentioned for the previous stage also apply to this stage. Trust is in this stage probably more important because buyers and suppliers have a larger mutual commitment. Later in this section we explain the role of shared resources at this stage of integration.
- *The integrative planning stage:* In the final stage the planning & control of a (part of) supply chain is more or less orchestrated. A clear example of orchestrated planning & control is the concept Multi-Level Supply Control as discussed earlier. In this concept the major decisions are centralized. A prerequisite to pass on to this integrative stage is that a supplier does not use

critical resources for more than one of their buyers. Therefore the existence of shared resources is an important barrier at this stage (see below).

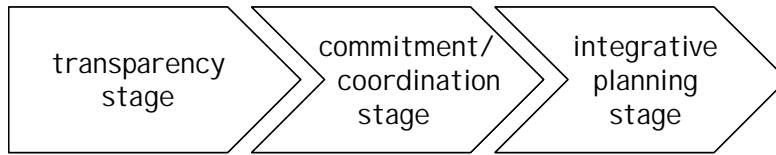


Figure 2. Stages of integration

Before we use these stages in our discussion we make a few remarks about the stages of integration. First, as is illustrated in Figure 2, we might see the three stages as rather overlapping and a particular organization might well be somewhere in between two stages of integration. Second, we do not suggest that it is necessarily so that a supply chain or a dyad in a supply chain starts with stage 1 and moves up to stage 3. With the three stages we just distinguish between three levels of integration with respect to supply chain planning and control. Third, these stages are particularly useful for describing the relationship between one supplier and one buyer: the level of integration does not need to be the same for a whole chain or for all relations of one supplier with its buyers.

From section 3 it is clear that shared resources are important barriers in supply networks and might be a major blockade for reaching integration. With the introduction of the three stages we are better equipped to elaborate on the subject of shared resources and integration. In the first stage the supply chain members are independent in their decision-making. In practice this means that they use their own internal rules to allocate capacity and give priority to the orders of different buyers. In general, that will be some kind of ‘local’ optimisation of the resources. In this stage it is relatively simple to cope with shared resources. Planning and control of shared resources become more complicated if buyers and suppliers move up to the second stage. In this stage flexibility and commitment is defined and formalized by the supply chain members. In that case it is much more difficult for a supplier to allocate capacity of shared resources according to its own optimal decision rules with respect

to optimal utilization and still satisfy the supply agreement drawn up with different buyers. Therefore moving up to this stage already means that the shared resources in the supply chain should be critically assessed and if possible removed. Critical assessment and removal of shared resources (with scarce capacity) is a prerequisite to enter the third stage of integration. A centrally orchestrated supply chain is not an option if the resources in the chain are shared with other chains. MLSC (section 2) is a clear example of an integrative concept that implicitly assumes the removal of shared resources.

The impact of shared resources in the different stages of integration helps to better understand the relevance of the concept of buyer focus. In this concept resources are singled-out for the purpose of one buyer and therefore correspond with the removal of shared resources in the supply relationship with that buyer. The central question in this discussion is under which conditions a buyer focus is achievable. In terms of the stages of integration we conclude that a buyer focus is more needed if supply chain members want to move up towards more integrative practices (e.g. from stage 1 to stage 3). Van Donk & Van der Vaart [7] show that the increasing uncertainty in volume, mix and specification is an important driving force to move towards the stages 2 and 3. However, it is also evident that removal of shared resources in a supply network and achievement of a buyer focus is only feasible under strict conditions. We start a further exploration of the relationship between integration and resources with describing and analysing the choices made in two illustrative, real-life examples.

Case 1. A supplier of foam used for isolation, beds, and in the automotive industry

This supplier produces foam for many purposes. Foam is produced in cubic meters (typical foam is produced in 1-3 pieces of 150 m³) in one single capital-intensive installation. This installation can be characterized as a shared resource for many product-market combinations and for many different buyers. Variety is not in the different types of foam but in the dimensions and sizes in which foam is delivered to buyers. The supplier has created separate facilities for a number of individual buyers.

These buyer-focused facilities are machines to cut the foam in the dimensions specified. The cutting stage responds directly to the buyer whereas the foaming is based on forward planning. There is a strategic stock of foams (decoupling point) to buffer against variability in demand. The cutting stage is integrated with the buyer's operations with a focus on sharing relevant information. Operational terms in the supply contracts are restricted to delivery lead-times. So the level of integration is somewhere between the first and second stage.

Reasons for the focused cutting facilities are the high variety in the dimensions (mix uncertainty) and the need for delivery flexibility. Furthermore the supplier has set up these focused facilities only for the larger buyers with high and rather stable aggregated demand. Each of the buyer-focused facilities is used for one buyer only, although it would be cheaper to use it for several buyers. In terms of shared resources and buyer focus the conclusion is that upstream from the decoupling point the resources are shared and downstream from the decoupling point the supplier has singled-out resources for a few large buyers. This choice seems logical if we consider the nature of the technology, the position of the decoupling point, and the flexibility required downstream and upstream from the decoupling point. Due to the buyer focused facilities supply integration could be moved up to the third stage, but this is not yet considered given the current satisfying performance.

Case 2. A supplier of granulated pigment used in synthetic products

The supplier produces granulated pigments in roughly two steps. All products are buyer-specific. In the first step raw materials are mixed according to recipe. Six mixers are available for this step in the process. In the second step the product is granulated. The supplier has four extruders for this part of the process. All mixers and extruders are currently interchangeable and not dedicated to one or more buyers.

Reasons are that the facilities are capital-intensive, setup costs are high and that the focus is on high utilization of capacity. Again, if we consider the nature of technology (and the process type) this is a logical choice. However, the performance of the supplier is in this case not satisfactory for their largest buyer (35% of the orders

and 22 % of the turnover). This buyer does not provide the supplier with adequate forecasts (mix, specification and delivery dates). As a result stocks are high in order to keep the delivery performance satisfactory here, at the expense of high stock and obsolescence costs. Therefore, singling out resources (buyer focus) for this particular buyer has important advantages. The integral trade-off is the gain in flexibility, speed (and the price the buyer is willing to pay for that) and less obsolete inventory weighted against the loss of less efficient capacity utilization. The buyer-focused part of the resources will enable integrative practices such as sharing of information, and collaborative forecasting and planning.

6. Discussion

From the above two cases and the discussion in the previous sections, we think that we are able to list the main factors that shape the level of integration under different characteristics of the supply chain/network. These are shown in figure 3.

resources	decoupling point	order-winners	technology	integration
shared	MTS	cost	mass production	stage 1
↕	↕	↕	↕	↕
buyer focus	MTO	flexibility, speed	flexible manufacturing	stage 2
				↕
				stage 3

Figure 3. Relevant characteristics of the chain and stages of integration

We assume as is illustrated in figure 3 that two natural configurations of circumstances are logical and easily understandable.

On the one hand the situations that are characterized by flexibility in delivery, mix and volume and delivery speed as main order-winning criteria. In order to perform according to these criteria, buyer-focused operations are one of the best means to meet the necessary flexibility. Here, planning and control of the operations can be integrated and production is make-to-order and very responsive to any changes

in mix, volume or delivery speed. This is closely associated with integration at stage 3.

On the other hand, supply chains with cost as the main order-winner can be distinguished. Then, shared resources might be necessary to achieve a high utilization of the processes involved. The operation of the supplier is set up for a range of products and for a number of buyers. Alternatively, a particular technology is the point of focus for the operation. It is evident that in this case a high level of integration is difficult to achieve and is not always necessary given the fact that cost is important. Usually, shared resources are not associated with make-to-order situations, so production will be mainly based on forecasts.

From the above two extreme positions we can conclude that the main arguments of 'focus' as given by Skinner, Hayes and Wheelwright are still valuable. However, the concept of buyer focus clearly adds an argument to the debate on focus: focus that aims at removing barriers in order to enable supply integration between supplier and one buyer. Buyer focus seems specifically interesting to serve large buyers with unpredictable demand patterns with respect to mix, volume or lead-time. We think that Figure 3 might serve as a tool in discussing to what extent integration is achievable, favourable and needed under different characteristics of the production process and the performance criteria involved and if buyer focus is needed or not. Even under contemporary circumstances as expressed in much literature on supply chain management, we think that some operations will be judged by their performance on cost. The consequence might be that integration will not be achieved or is not necessary.

While Figure 3 might suggest that there are just two possible configurations for the links between suppliers and buyers, we think that other configurations might exist as well. For example, cost as the main order-winner might also imply an integral trade-off of all costs in the chain, leading to relocation of (physical) resources into a buyer-focused operation. Here, the investment in extra capacity might be leveraged against lower inventory, less communication, lower transportation costs and/or a larger variety of supplies and products. We think that Figure 3 might be a good

starting point for further research into the issues of integration and the nature of resources and the situations that match these concepts. That will be discussed in the next section.

7. Conclusion and further research

This paper discusses the concepts of integration, shared resources and buyer focus. It discusses the concept of integration from different perspectives in the supply chain management literature and assumes that three stages of integration with respect to planning and control can be distinguished. The relatively new concept of buyer-focused operations, serving the needs of one buyer in order to be able to deliver flexible with respect to delivery, mix and volume is introduced and discussed in the context of previous work on focus. This article suggests that buyer focus and shared resources are the extreme points of a continuum. Shared resources, buyer focus and integration are explored in two short illustrative cases and integrated into one comprehensive figure that submits that two types of configurations are conceivable. That is either a modest stage in integration or a high level of integration. With respect to resources two extreme configurations are distinguished: shared resources that act as barriers for integrative practices and buyer-focused resources that enable centralized planning and high levels of integrative practices (stage 3). Buyer focus adds a supply chain argument to the debate (that has been directed to internal performance) on focused operations and is a valuable concept for improving the level of integration in a supply relationship.

From a managerial point of view, we think that Figure 3 can be an interesting starting point for discussing the need and possibility of integration between buyers and suppliers. We think that this paper shows that organizations do not always need to pursue a high level of integration.

Further research should be directed to more empirical work that shows in more detail if the configurations from section 6 do exist. Also, we think that intermediate positions between shared resources and pure buyer-focused resources are interesting for further research. For instance, a 'virtual' buyer focus (through

allocation of capacity) might be an alternative to physically singling out resources for one buyer. Next, the actual operation and actual level of integration of buyer focused operations or cells needs to be studied in more depth. Along with that answers have to be found to questions such as, how do organizations make the actual choice, how is implementation of a buyer focused part of their operations and the associated integration achieved and which type of resources are best suited to be singled out.

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